

1. Study the matter shown in Figure 1. Each dot represents a particle of matter. [Assume the particles are uniformly distributed throughout each object, and particles of the same size have the same mass.]
- a. In the table below, show how the masses, volumes, and densities of A and B compare by adding the symbol $<$, $>$, or $=$ to the statement in the second column.
- b. Explain your reasoning for each answer in the last column.

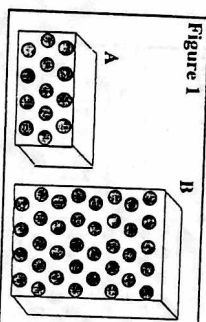


Figure 1

Property Relationship

Mass A ____ B

Volume A ____ B

Density A ____ B

2. Study the matter in Figure 2. [Assume the particles are uniformly distributed throughout each object, and particles of the same size have the same mass.]
- a. In the table below show how the masses, volumes, and densities compare by adding the symbol $<$, $>$, or $=$ to the statement in the second column.
- b. Explain your reasoning for each answer in the last column.

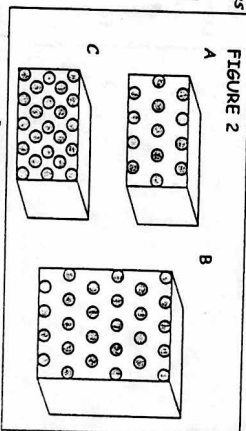


Figure 2

Reasoning

Property Relationship

Mass A ____ B

Mass A ____ C

Volume A ____ B

Volume A ____ C

Density A ____ B

Density A ____ C

4. Is object E or object F more dense? [Assume the particles are uniformly distributed throughout each object, and particles with a larger size have a larger mass.] Explain your reasoning.

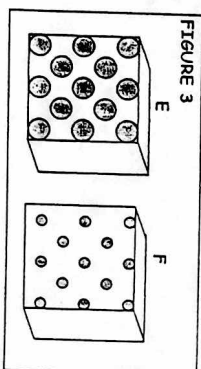


Figure 3

Density Worksheet

- Define mass?
- Define volume?
- Define density and show the formula for calculating density.
- Why does changing the shape of an object have no effect on the density of that object?
- Aluminum is used to make airplanes. Cast iron is used to make weightlifting equipment. Explain why the densities of these metals make them useful for these purposes?
- What is the density of water? Remember for water $1g=1ml=1cm^3$
- Why does an air bubble rise to the surface of a glass of water?
- Calculate the densities of the following objects. Remember to place units after each number.

Object A	length = 6cm	width = 3cm	height = 1cm	mass = 36g
	volume = ____		density = ____	
Object B	length = 10cm	width = 5cm	height = 2cm	mass = 300g
	volume = ____		density = ____	
- Object C

Use the water displacement method to determine the density of object C (silly putty).

initial water level in graduated cylinder = 25ml

final water level after placing silly putty into graduated cylinder = 29ml

mass of silly putty = 8g

volume = _____

density = _____

9. Which of the following materials will float on water (density 1 g/ml)?

air = .001 g/cm³

corn oil = .93 g/cm³

glycerine = 1.26 g/cm³

corn syrup = 1.38 g/cm³

wood = .85 g/cm³

steel = 7.81 g/cm³

rubber = 1.34 g/cm³

ice = .92 g/cm³

water = 1.00 g/cm³

10. Assuming the materials don't mix, show how the materials would "stack up" in a graduated cylinder.